MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2017/2018

BSI3124 – SEMINAR IN INVESTMENT

(All sections / Groups)

24 OCTOBER 2017
2.30 P.M.- 4.30 P.M.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **6** pages. There are total **4** questions.
2. Answer **ALL** questions.
3. Marks are shown at the end of each question.

Answer all questions in the answer booklet provided.

QUESTION 1 (25 marks)

(a) Read the extracted journal and answer the following questions.

The effects of environmental sustainability and R&D on corporate risk-taking: International evidence by Rajabrata Banerjee & Kartick Gupta

1. Introduction

Corporate risk-taking[1] is an essential part of value-enhancing risk-management and largely considered as a key decision-making strategy used by firms to expand and grow. Stulz (2015) argues that although taking excessive risk is often considered a poor managerial decision, without some level of risk there is no reward. This is because without some level of risk-taking, uncertain but potentially value-enhancing projects cannot be undertaken resulting in suboptimal utilisation of capital. Thus, risk-taking is an essential part of shareholders' wealth maximisation.[2] However, risk-taking augments a firm's growth when other value-enhancing firm-level attributes are successfully implemented. For example, literature suggests that risk-taking firms are better in adopting good governance structures and better capital regulations (John et al., 2008; Laeven and Levine, 2009). The question now arises, can environmentally sustainable practices also enable firms to take more risk and in turn, positively affect the firm's growth?

This is an important question in light of deteriorating environmental conditions worldwide. Recently, major initiatives have been taken by many international organisations, such as the United Nations, to promote sustainable practices by firms. For instance, at the recent United Nations Climate Change Conference (COP21) held in Paris in 2015, around 195 countries volunteered to address climate change concerns by adopting energy policies and targets. Similarly, Portfolio Decarbonisation Coalition (PDC), which was co-founded in 2014 by the United Nations Environment Programme (UNEP) and its Finance Initiative (UNEP FI), continually encourages global investors to commit towards managing investment risks associated with climate change.3 Since inception, PDC signatories have already committed over US$ 600 billion to decarbonise asset under management (AUM).

Thus, firms may perceive that undertaking environmentally sustainable practices eventually leads to shareholder wealth maximisation and also pre-empts scrutiny from stakeholders. Since firms are increasingly undertaking environmentally sustainable practices and joining supranational organisations in addressing greenhouse gas emissions, the shareholders interest are not in conflict with the interest of other stakeholders. Despite risk-taking playing an important role in corporate decision-making processes, the extant literature is almost silent on the effects of environmentally sustainable practices on corporate risk-taking. Without a clear understanding, organisations such as UNEP-FI, PDC, and firms will continuously face challenges in convincing the new signatories and

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investors of the benefits of a decarbonising investment portfolio or undertaking environmentally sustainable practices. Moreover, banks and other lending agencies are increasingly relying on Environment, Social, and Governance (ESG) indicators for lending money to firms. If the firms have a poor record of ESG practices, access to capital will become difficult and costly. This eventually may constraint the firms to undertake either suboptimal investments or to postpone value-enhancing investments.

The second aspect of value-enhancing risk management that we consider in this study is the R&D intensity of firms. One of the implications that originates from the theory of resource-based view (RBV) of competitive advantage is with the proper use of intangible assets (including R&D), a firm could differentiate their products from its competitors and gain sustained competitive advantages in the long run (Hart, 1995; Barney, 2000; Rothaermel, 2013). However, R&D expenditure is typically considered as a risky investment by firms. Here, the investor takes more risk by reallocating firm's resources from tangible assets towards intangible assets, such as R&D (Bhagat and Welch, 1995; Kothari et al., 2002; Coles et al., 2006). However, there is no certainty that these innovations will be value-enhancing and offset the cost associated with them.

In this context, we can also look at the combined effect of R&D intensity and environmentally sustainable practices on corporate risk-taking. The relationship between the variables becomes much more complex. If we believe that to comply with a higher regulatory standard, firms consume valuable resources to conduct environment specific innovations, a trade-off may exist between undertaking measures on better environmental practices and engaging in higher R&D related activity (Palmer et al., 1995). Since undertaking R&D activities are costly, firms need to first ensure that they are fully compensated against the cost associated with these practices before they commit to reducing their greenhouse gas emissions. In other words, if firms are unsure, then R&D and environmentally sustainable practices may turn out as bad investments and crowd out other types of investments on process, product innovation and diversification. Consequently, these firms may lose their competitive edge in their respective industries. This suggests that the combined effect of R&D and environmentally sustainable practices on corporate risk-taking can turn out to be insignificant or in extreme cases could also be negative.

(Source: Banerjee and Gupta (2017). The effects of environmental sustainability and R&D on corporate risk-taking: International evidence. Energy Economics, 65, 1–15.

(i) Identify the research problem. (7 marks)

(ii) Discuss the research question that the researchers intend to carry out in the study. (6 marks)

(b) Explain the investment strategies below.

(i) Fundamental analysis (4 marks)

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(ii) Technical analysis (4 marks)

(iii) Buy-and- hold strategy (4 marks)

QUESTION 2 (25 marks)

(a) Explain arbitrage pricing model. (7 marks)

(b)Describe investor speculation and how investor decisions are affected under behavioral finance. (6 marks)

(c) What is event study analysis? Explain the steps involved in conducting an event study. (12 marks)

QUESTION 3 (25 marks)

(a) Read the extracted article and answer the following questions.

1. Introduction

Inspired by the clean surplus relation of Miller and Modigliani (1961) that the total dividend equals total equity earnings minus the change in total book equity, Fama and French (2015a) introduce a five-factor asset pricing model that adds the profitability and investment factors to the three-factor model of Fama and French (1993). The five-factor time-series regression is

$$R_{it} - R_{Ft} = a_i + b_i Mkt_t + s_i SMB_t + h_i HML_t + r_i RMW_t + c_i CMA_t + e_{it}, \quad (1)$$

where $R_{it} - R_{Ft}$ is the portfolio i's return in excess of risk-free rate R_{Ft} for month t, Mkt_t is the value-weight (VW) market portfolio return in excess of risk-free rate, SMB_t, HML_t, RMW_t and CMA_t are respectively the size, value, profitability and investment factors. Before the establishment of the five-factor model, there is a large body of literature addressing the profitability and investment patterns in average returns for the U.S. stock market.[1]

(Source: Guo, Zhang, Zhang and Zhang (2017) The five-factor asset pricing model tests for the Chinese stock market, Pacific-Basin Finance Journal, 43, 84–106)

(i) Explain each factor under Fama-French five-factor model. What are the results found by Fama-French (2015) for each factor? (15 marks)

(ii) What is the conclusion made by Fama-French (2015) based on the 5-factor model they develop? (5 marks)

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(b)

3. Data and methodology

3.1. Data

This study will cover all of the active oil and gas companies quoted on the main market of the London stock exchange. It includes oil and gas producers, oil equipment and services companies. The data consists of daily returns of oil and gas companies, the FTSE All Share index, the return (risk free rate) on UK Treasury bills and the Brent crude oil price for the period between January 2, 2004 and December 31, 2015. The Fama-French and momentum factors for UK stocks were adopted from Gregory et al (2013) constructed for the UK market.

3.2. Methodology

In this section, the four factor model of Fama-French-Carhart is augmented with the lagged returns of Brent crude oil price that are asymmetrically decomposed using Mork et al (1994)method into five lags each of oil price increases (+) and oil price decreases (–). Due to the nature and established characteristics of financial data, GARCH (1, 1) conditional variance specification is employed to estimate the following equation that represents the model used in the study.

$$\begin{aligned} R_{it} - R_{ft} &= \alpha_{i0} + \beta_{im}(R_{mt} - R_{ft}) + \beta_1 SMB_t + \beta_2 HML_t + \beta_3 Mom_t \\ &+ \sum_{j=0}^{5} \beta^{+}_{ioil_j} R_t OilPrice^{+}_{t-j} + \sum_{j=0}^{5} \beta^{-}_{ioil_j} R_t OilPrice^{-}_{t-j} + \varepsilon_{it} \end{aligned}$$

Where R_{it} is company's daily stock return; R_{ft} is the risk free rate of return (UK Treasury bill rate adjusted to a daily rate); Rit−Rft is the individual stock's excess return; α_{i0} is the constant; β_{im} is the coefficient representing the market risk (systematic risk) of the London stock exchange; R_{mt} is market's expected daily returns; Rmt−Rft is the market's daily excess return (risk premium); SMB_t is the Small Minus Big (Difference between the small and large stock portfolio returns based on companies' market values); HML_t is the High Minus Low (Difference between the high and low stock portfolio returns based on companies' book-to-market values); Mom_t is the momentum factor (assumption that price is more likely to be moving in the same direction without change); $R_tOilPrice$ is the log changes of the Brent crude oil price decomposed into 5 lags of both positive and negative changes; and ε_{it} is the error term.

(Source: Sanusi & Ahmad (2016). Modelling oil and gas stock returns using multi factor asset pricing model including oil price exposure, Finance Research Letters, Finance Research Letters, 18, 89–99.)

Based on the extracted journal above, oil price has been incorporated into multi-factor asset pricing model. Explain why there are many variants of asset pricing model in the literature. (5 marks)

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QUESTION 4 (25 marks)

Read the extracted article below carefully and answer the following questions.

Do socially (ir) responsible investments pay? New evidence from international ESG data by Benjamin R. Auer and Frank Schuhmacher.

1. Introduction

Over the past decade, socially responsible investment (SRI) has become a major trend in the mutual fund industry and a key topic in financial research all around the world.1 SRI can be broadly defined as an investment process that involves identifying companies with high corporate social responsibility (CSR) profiles where the latter are evaluated on the basis of environmental, social and corporate governance (ESG) criteria (see Renneboog, Ter Horst, & Zhang, 2008a). It implies that investors do not primarily wish to derive financial utility from their investment decisions but also strive for non-financial utility resulting from holding portfolios that are consistent with personal and societal values (see Bollen, 2007).

While the issue of non-financial utility is undisputed, there is a still ongoing debate on the potential economic viability of SRI. In this respect, the literature reveals three opposing views (see Preston & O'Bannon, 1997; Sauer, 1997). The 'doing good while doing well' view indicates a positive relationship between social and financial performance and suggests superior returns from choosing high-rated stocks. It can be observed if the so-called 'available fund hypothesis' or the 'good management hypothesis' hold. While the former argues that high corporate financial performance yields slack resources enabling firms to invest in socially responsible activities (see Eichholtz, Kok, & Yonder, 2012), the latter implies that meeting the requirements of major stakeholders by ensuring, for example, product enhancement or job security, can lead to higher financial performance as a result of continued business or firm loyalty (see Cornell & Shapiro, 1987; McGuire, Sundgren, & Schneeweis, 1988). The 'doing good but not well' point of view suggests a negative relationship that is linked to the 'managerial opportunism hypothesis' or the 'trade-off theory'. According to the first hypothesis, managers may tend to maximise private gains in prosperous times and placate weak financial performance by increasing the shareholders' welfare through social activities (see Posner & Schmidt, 1992). The second hypothesis asserts that socially responsible activities may siphon off resources from a firm, putting it in relative disadvantage to firms that are less socially active (see Aupperle, Carroll, & Hatfield, 1985). Thus, this line of argument suggests the superiority of low-rated firms. Finally, a last perspective is that SRI neither adds nor destroys portfolio value because CSR is not priced. It resembles the standard framework of finance, where factors that are not proxies for risk do not affect expected returns and socially responsible investors do not reduce the relative cost of capital to socially responsible companies by favouring their stocks (see Hamilton, Jo, & Statman, 1993).

(Source: Auer and Schuhmacher (2016). Do socially (ir)responsible investments pay? New evidence from international ESG data, The Quarterly Review of Economics and Finance, 59, 51–62)

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(i) Social responsibility investing has become popular in mutual fund industry and especially for international investors. Explain social responsibility investing.

(8 marks)

(ii) In light of the corporate scandals that affect company values, environment, social and corporate governance (ESG) factors become more important to business. Explain each component and provide an example.

(12 marks)

(iii) Explain why ESG matter. (5 marks)

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